

## DESCRIPTION

### LIQUID CONTAINER

#### TECHNICAL FIELD

The present invention relates to a liquid container for containing various liquids including beverages, such as a PET bottle.

#### BACKGROUND ART

Usually, beverages including refreshing drinks, carbonated drinks, teas and alcoholic drinks are contained in plastic liquid containers, such as PET bottles, when they are offered for sale. Such a liquid container is provided with a hollow container body capable of accommodating a drink and a neck extending from the top end of the container body, and a mouth is disposed at the top end of the neck.

When the drink is to be poured from this liquid container into a cup or a glass, the container body is held and inclined while the drink is being poured so that the mouth is positioned over the cup or the glass, but when the quantity of drink in the liquid container is large, the drink may splash out when the container body is inclined, resulting in a problem that the drink may be spilled out of the cup or the glass or be scattered around.

In this connection, there is known what has a neck extending obliquely upward at the top of the container body and is inclined in the inclining direction of the neck when pouring the drink to facilitate pouring of the drink into the cup or the glass (see, for instance, Patent Document 1).

However, since what has a neck whose shape is inclined in advance as described above cannot be held with the mouth of the neck oriented

straight upward when the drink is not to be poured, inconvenience often occurs with the neck kept inclined. For instance, in a drink manufacturing plant, the drink cannot be poured into the container from right above it, and accordingly there is the trouble of impossibility to use the existing plant facilities. Also, when such containers are to be displayed as merchandise in sales stores, unless their inclined neck are aligned with one another, the displayed state will look disorderly and deteriorate the looks of the store display.

Patent Document 1: Japanese Utility Model Registration No. 3107288

#### DISCLOSURE OF THE INVENTION

An object of the present invention, attempted in view of the problems noted above, is to provide a liquid container permitting pouring of liquid with its mouth directed obliquely and also upright orientation of the mouth.

In order to achieve the object stated above, a liquid container is provided with a hollow container body capable of accommodating any desired drink and a neck extending from the top end of the container body, with a mouth for pouring liquid disposed at the top end of the neck, the liquid container being characterized being provided with a movable part which can incline sideways the neck positioned above it in a prescribed position in the vertical position of the neck.

This enables, when liquid is to be poured into an external container, the pouring can be done with the mouth directed toward the external container by inclining the neck in the upper part of the movable part sideways, and accordingly it is made possible to reduce the trouble of letting the liquid spill out of the external container or scatter around it. Also, except when pouring liquid, the mouth can be kept right upward without inclining the neck.

A liquid container according to the invention, since it allows pouring of liquid with its mouth directed obliquely, pouring of the liquid into an external container is facilitated and the pouring of the liquid is enabled to be done smoothly. Also, as it is also permissible to direct the mouth right upward, it is possible, in a liquid manufacturing plant for instance, to pour the drink into the container from right above it as is the case with ordinary liquid containers and accordingly there is the advantage of possibility to use the existing plant facilities. In addition, when such containers are to be displayed as merchandise in sales stores, they can be displayed in an orderly way as ordinary liquid containers are by directing their neck right upward, resulting in the advantage that the looks of the store display are not deteriorated.

#### BRIEFLY DESCRIBE OF THE DRAWINGS

Figure 1 is an overall perspective view showing a liquid container of an embodiment according to the present invention;

Figures 2(a) to 2(c) are front views of the liquid container;

Figure 3 is a front section of the essential part showing a state in which the neck is pulled upward;

Figure 4 is a front section of the essential part showing a state in which the neck is pressed downward;

Figure 5 is a front section of the essential part showing a state in which the neck is inclined;

Figure 6 is a side view showing a state of pouring drink out;

Figure 7 is a side view showing another state of pouring drink out;

Figure 8 is a plan of a liquid container representing another embodiment according to the invention;

Figure 9 is a front view of the essential part of the liquid

container; and

Figure 10 is a front section of the essential part of the liquid container.

#### DESCRIPTION OF SYMBOLS

1 ... container body, 2 ... neck, 2a ... first neck, 2b ... second neck, 3 ... movable part, 3a ... concave, 6 ... drink, 8 ... liquid.

#### BEST MODE FOR CARRYING OUT THE INVENTION

Figure 1 through Figure 6 show an embodiment of the present invention, wherein Figure 1 is an overall perspective view of a liquid container; Figures 2(a) to 2(c), its front views; Figure 3, a front section of the essential part showing a state in which the neck is pulled upward; Figure 4, a front section of the essential part showing a state in which the neck is pressed downward; Figure 5, a front section of the essential part showing a state in which the neck is inclined; and Figure 6, a side view showing a state of pouring drink out.

This liquid container is provided with a container body 1 capable of containing a drink, a neck 2 extending upward from the upper end side of the container body 1, a movable part 3 disposed in a prescribed position in the vertical direction of the neck 2, and the container body 1, the neck 2 and the movable part 3 are formed integrally by known blow molding.

The container body 1 has a vertically long hollow shape whose transverse section constitutes a substantially rectangular shape, and is formed in a size matching a prescribed capacity (e.g. 1 liter, 1.5 liters, 2 liters and so forth).

The neck 2 comprises a first neck 2a formed underneath the movable part 3 and a second neck 2b formed over the movable part 3, and a mouth

2c is disposed at the upper end of the second neck 2b. The first neck 2a is so formed that its transverse section constitutes a substantially rectangular shape, and its side faces so extend obliquely upward as to approach one another from the upper end side of the container body 1. The upper end part 2d of the first neck 2a is so formed that its transverse section constitutes a round shape and that its diameter increases obliquely upward. The second neck 2b is so formed that its transverse section constitutes a round shape, and its circumferential shape is so formed that the diameter is greater in the substantially central part in the vertical direction and is smaller toward the upper end and the lower end. A cap-shaped lid 4 is screwed onto the upper end of the second neck 2b, and the mouth 2c is opened and closed by the lid 4.

The movable part 3 is arranged between the first neck 2a and the second neck 2b, and the second neck 2b is so deformable as to be inclined in the transverse direction. The movable part 3 is formed in a flange shape extending in the radial direction of the neck 2, and the second neck 2b is arranged inwardly in that radial direction. Thus, the movable part 3 extends outward in the radial direction from the lower end side of the second neck 2b to the upper end part 2d of the first neck 2a, and its flange part is to be deformed in the vertical direction. In this case, the movable part 3 is so formed as to be capable of being held deformed upward as shown in Figure 2(a) and in a state in which its flange part is deformed downward as shown in Figure 2(b).

Thus, as shown in Figure 2(a) and Figure 3, when the second neck 2b is pulled upward, the movable part 3 is so deformed as to have an upward convex shape, and the neck 2 is held in a state of being stretched in the vertical direction. Also, as shown in Figure 2(b) and Figure 4, when the second neck 2b is pressed downward, the movable part 3 is

so deformed as to have a downward convex shape, and the neck 2 is held in a state of being contracted in the vertical direction. Further, as shown in Figure 2(c) and Figure 5, when the second neck 2b is inclined sideways, the movable part 3 is so deformed as to have a downward convex shape on one end side in the widthwise direction (the inclining direction of the second neck 2b) and the movable part 3 is so deformed as to have an upward convex shape on the other end side in the widthwise direction (the opposite side in the inclining direction of the second neck 2b) to hold the second neck 2b in the inclined state. In this case, the second neck 2b can be inclined toward any side in the radial direction of the movable part 3.

The liquid container configured as described above is to contain a drink, such as tea, juice, alcoholic drink or the like and, when a drink 6 is poured into a glass 5 as shown in Figure 6, pouring of the drink 6 into the glass 5 is facilitated by inclining the container body 1 in a state in which the second neck 2b is slanted toward the glass 5, resulting in a reduced risk of spilling the drink 6 out of the glass 5 or letting it scatter around the glass 5.

In this way, the liquid container in this embodiment, as it is provided with the movable part 3 so deformable as to incline the second neck 2b sideways, facilitates pouring of the drink 6 into the glass 5 by having the drink 6 poured in a state in which the second neck 2b is slanted toward the glass 5, and the pouring of the liquid is enabled to be done smoothly. Also, as the second neck 2b can be slanted as required, it is permissible to keep the mouth 2c right upward without inclining the second neck 2b except when the drink is to be poured. This makes it possible, in a liquid manufacturing plant for instance, to pour the drink into the container from right above it as is the case with ordinary liquid containers and accordingly there is the advantage

of possibility to use the existing plant facilities. Also, when such containers are to be displayed as merchandise in sales stores, they can be displayed in an orderly way as ordinary liquid containers are by directing their second neck 2b right upward, resulting in the further advantage that the looks of the store display are not deteriorated.

Moreover, as the movable part 3 is formed in a flange shape extending in the radial direction from the lower end side of the second neck 2b positioned above it and the flange-shaped part is deformable in the vertical direction, the second neck 2b can be inclined toward any side in the radial direction of the movable part 3. This enables the pouring of the drink to be done easily without having to hold the container body 1 in a different way depending on the inclining direction of the second neck 2b. In this case, since the movable part 3 expands in a flange shape toward underneath the mouth 2c, there is another advantage that drops of the drink falling from the mouth 2c can be received by the movable part 3 and the drops of the drink can be prevented from flowing down to the container body 1.

Furthermore, when the second neck 2b is inclined sideways in the state of being pressed downward, as a portion (on the opposite side in the inclining direction) of the flange-shaped part of the movable part 3 is deformed upward and the position of the liquid face 6a of the drink 6 within relative to the mouth 2c is correspondingly lowered, even the quantity of the drink 6 within is large, the drink 6 will not vigorously splash out when the container body 1 is inclined, and it is thereby made easier to pour the drink 6.

Also, as the flange-shaped part of the movable part 3 is formed to be held in an upward deformed state and a downward deformed state, the inclined state of the second neck 2b can be securely held.

Further, as the container body 1, the neck 2 and the movable part

3 are integrally formed, they can be fabricated in a similar fabricating method to ordinary containers, for instance by blow molding, and accordingly a significant advantage in practical application can be achieved.

Incidentally, though the movable part 3 formed in a flange shape is shown with respect to the embodiment described above, a movable part in some other shape may as well be disposed, such as forming part of the neck 2 in a bellows shape. Also, though the transverse section of the container body 1 has a substantially rectangular shape in the embodiment described above, its transverse section may as well be in a round shape. Further, the present invention can be applied not only to containers for selling drinks, such as PET bottles, but also to containers for other purposes including, for instance, drink containers for household use and canteens. The invention can also be applied to what is intended for containing various non-drink liquids, such as seasonings, oils, detergents and liquids for industrial use. In this case, when it is desired to pour the liquid little by little as in the case of a seasoning or the like, when a liquid 8 is to be poured into a container 7 as shown in Figure 7, if the second neck 2b is slanted toward the direction opposite to the container 7 and the liquid is discharged, the liquid 6 will not be discharged in a large quantity at a time even if the container body 1 is slanted, but the liquid 8 can be poured securely little by little.

Figure 8 through Figure 10 show another embodiment of the invention, wherein Figure 8 is a plan of a liquid container; Figure 9, a front view of the essential part thereof; and Figure 10, a front section of the essential part thereof. Incidentally, the similar constituent parts as in the foregoing embodiment are designated by respectively the same symbols.



In this embodiment, the movable part 3 is provided with a plurality of concaves 3a, and each of the concaves 3a is so arranged at intervals in the circumferential direction of the movable part 3 as to be positioned on the periphery of the flange-shaped part. In this case, each of the concaves 3a is so formed in the movable part 3 as to extend from the upper face of the flange-shaped part to the upper end part 2d of the first neck 2a.

This causes, when the flange-shaped part of the movable part 3 is deformed in the vertical direction, stresses in the circumferential direction arising on the periphery of the flange-shaped part to be absorbed by the deformation of each of the concaves 3a in the circumferential direction, so that, even if the movable part 3 is deformed repeatedly, no crack occurs in the periphery of the flange-shaped part, resulting in improvement in durability.